focus

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India's Population Problem

Within the borders of the Union of India—in total area less than half as large as the United States—live 357 million people, slightly more than the population of the United States and the Soviet Union combined. At this juncture India already is burdened with an average population density about 5 times the world average, and it faces a future population growth of nearly 50 million people every decade—a staggering increment for an already crowded land, and one that presents the country with seemingly insuperable problems.

Contrary to popular notion, India's *rate* of growth has not been greater than that of most other countries: the average rate is only 1.5 per cent a year, slightly less than that of the United States. But in such a teeming land, even a small percentage increase augments the numbers enormously. The birth rate (more than 30 per 1,000) has been consistently high in recent years, while the death rate (20 per 1,000) has steadily fallen, thereby giving a continuous net increase. Improvements in medical facilities, better control of epidemics, the discovery of new drugs, both curative and preventive, have all contributed to lowering the death rate. At the same time, the prevalence of peaceful conditions and the control of famines by relief measures have also played their part.

No less a problem than the growth in population is its highly uneven distribution. In most of the densely peopled countries of Western Europe, an increasingly large proportion of the population has found employment in industries; there has been little rise in the ratio of farm population to the supply of land. In India, on the contrary, as the population grew, more and more people had to try to make a living from farming. As a result, the good farm lands have become steadily more overcrowded. One-third of the people are concentrated on less than 6 per cent of the land; average densities in these areas exceed 640 persons per square mile.

Actually, densities are much higher than this; for in an agricultural country the population density should be calculated not on the gross area but on the cultivated area. On this basis, few places in the world have such high densities as the coastal areas and the Gangetic lowland of India—between 1,000 and 2,250 persons per square mile. This is even true of certain semi-desert areas such as Bikaner and Jaipur. As the farm population has grown more rapidly than the area cultivated, there is less and less land per farmer; 50 years ago, on an average each farmer had 1 ½ acres of cultivated land; today he has no more than ⅘ of an acre.

Unfortunately, the present upsurge in population has not been accompanied by any comparable in-

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crease in food production; consequently, the per capita shortage of food is becoming yearly more acute. If this situation is allowed to continue without planned controls, it is bound to be checked by the harsh natural methods of starvation, disease, premature death, and violence. The world cannot long exist in peace if half its people (the underdeveloped countries of India, China, and Southeastern Asia) are ill-fed.

It is difficult to make any precise comparison between the per capita amount of food available 50 years ago and that available today, especially because of the recent introduction of cash crops such as cotton, jute, and sugar cane into the agricultural rotation. But even if proper weight is given to these, and the entire production is converted to a uniform food crops basis, there is no doubt that there has been a substantial decrease in the quantity available per person, the estimates being 600 pounds in 1901 and 450 pounds in 1951. Is it surprising, then, that famine reigns persistently over vast areas in India?

Dr. Jacques M. May, of the American Geographical Society, has suggested that the minimum daily food requirement for India may be put at 2,100 calories per person. According to the meager evidence brought to light by the few health surveys that have been conducted, the available quantity is only about 1,600 calories. In addition, it must be remembered that this diet is not properly balanced; there is an extreme dearth of foods of animal origin.

Other than imports, one of the simplest methods of tackling the difficult problem of food shortage would be to cultivate alternative food crops that are better yielders than the cereals. Crops such as cassava (tapioca), sweet potatoes, and bananas could play an important part in augmenting the food supply. Tubers are heavy yielders; in fact, 10 to 12 tons of tapioca (say 3½ to 6 tons in dehydrated form) could be obtained from lands of average fertility that now produce no more than ½ to ⅓ of a ton of rice or wheat. It has been estimated that the present annual deficiency of 3 to 4 million tons of grain, which would require an additional 10 million acres in cereals, could be made good by the cultivation of 1 million acres in cassava. Though it is well known that people are loath to change their food habits, the use of such subsidiary foods might well become popular in the neighborhood of towns at least, where the food deficiency is greatest and the educational standards highest. It should be pointed out, however, that a diet of tapioca starch must be supplemented with proteins, such as fish. Even if there are religious taboos about eating fish, it should not be too difficult for chemists to impregnate tapioca flour with the required quantity of proteins.

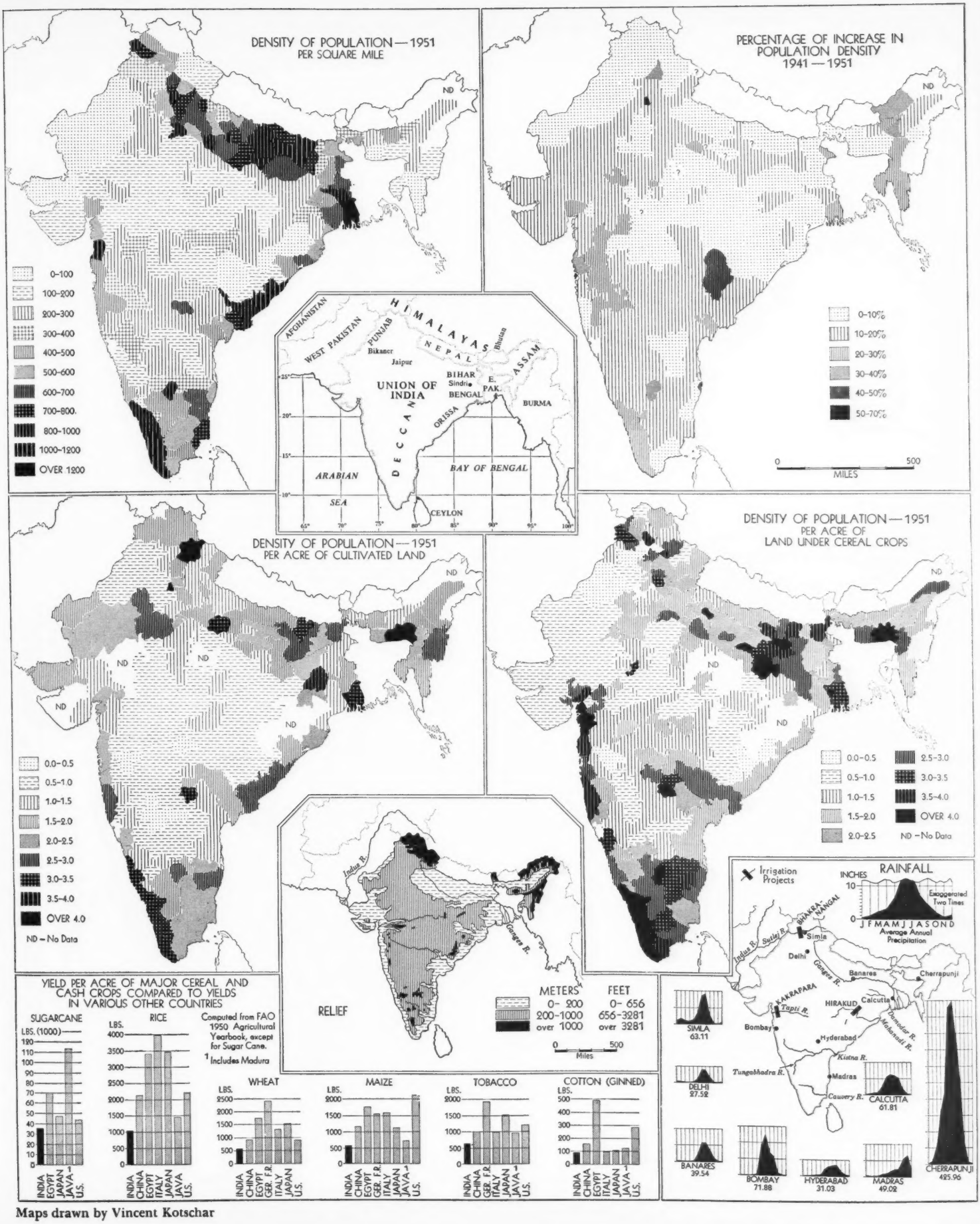
Another means of overcoming the food shortage would be to increase the acreage under cultivation. Except in isolated tracts such as Bikaner, parts of Punjab and Deccan (where improvements in irrigation have brought new lands under cultivation), or Assam (as a result of deforestation), the cultivated area has not substantially increased since the beginning of the century. There are extensive areas in Bihar, West Bengal, East Punjab, and scattered places in the south where the acreage under cultivation has actually decreased.

For the country as a whole, it is fairly certain that the area devoted to cereal crops could not be augmented appreciably. Government statistics may register a vast extent of land as cultivable wastes, nearly a quarter of the total cultivated area; but is it probable that the farmers of India, with at least 4,000 years of agricultural tradition behind them, would leave cultivable lands uncultivated in the face of a desperate land shortage? Is it not more likely that these lands remain untilled because of lack of water, poverty of soil, bad drainage, topography, or some other factor that implies costly improvements before they can be put to good use? And unless large-scale conservation is coupled with expansion, careless deforestation, overirrigation resulting in alkalinity, and overgrazing of pastures are likely to create new wastelands or diminish fertility to a point where gross output will not be much, if any, greater than it is at present.

Yet another method of combating the problem would be to increase the yield of crops. The yields of most crops in India are extremely poor in comparison with those of Great Britain, France, the United States, China, and Japan.

Yields could be considerably increased by the greater application of cow dung and other waste matter. Much of the cow dung is consumed as fuel by the *ryots* (farmers), and if it were diverted to the fields, an alternative fuel would have to be made available at fairly cheap prices; fast-growing plants such as *Casuarina* and *shishum* might be grown throughout the wastelands to provide such.

As a result of excessive concentration on cash crops (sugar cane, cotton, and jute), the age-old practice



Maps drawn by Vincent Kotschar

which included legumes such as peas and *arhar* (*Cajanus indicus*) in rotation has been almost completely abandoned, and this has led to impoverishment of the soil and appreciably lower yields. A carefully planned rotation needs to be initiated, and it is suggested that soybeans be introduced both for manurial and nutritional purposes.

Artificial fertilizers are rarely used because they are beyond the means of the average ryot. Unless and until government subsidy comes to the rescue, no tangible improvements in this respect can be expected. The Agricultural Departments should be entrusted with the distribution of such fertilizers at subsidized prices, preferably on loan, repayable at the following harvest. In order to maintain some semblance of fertility, the poor ryot is now forced to let part of his lands lie fallow, because this requires the least amount of capital. In practice, nearly one-fourth of the cultivated area is in fallow every year.

Because of the ryot's extreme poverty, his love of agricultural land, and the inheritance laws, the bulk of the farm holdings are not merely fragmentary but also dispersed. Agriculture cannot become efficient until the unit of management becomes much larger than it is at present.

By far the most practical way of accomplishing this would be through cooperation. If a cooperative society were formed for each village, the entire cultivated area in the village could be treated as a single farm. For convenience, each such farm could be subdivided into suitable blocks, say 50 or 100 acres in size. Sufficient inducements would have to be offered to attract the landholders to these societies, and it might not be enough to promise that each person would receive a share of the dividend in proportion to the size of his holding. In addition, perhaps the cooperative society, or better still the government, should assure each owner of receiving as much grain as he did in the past, and should guarantee that any surplus would be shared equally (after deductions for the increased cost of plowing and manure) between the owner and the cooperative society.

The cultivation of a farm block should be entrusted to one of the more skilled agriculturists of the village, a person who has demonstrated his ability by better yields in the past; and, to prevent rural unemployment, it should be obligatory that he employ the petty owners and the landless laborers of the village.

Another great problem of Indian agriculture is the large number of people dependent upon it. In 1901, in the area corresponding to the Union of India, there were 146 million, out of a total population of 235.5 million. In 1951, there were 250 million, out of a total of 357 million. In other words, in the last 50 years there has been an increase of more than 100 million farmers without any substantial increase in cultivated land. Is it surprising, then, that agricultural conditions are much worse now than they were at the beginning of the century?

It is this increasing pressure of population upon the soil and the growing indebtedness of the farmers that have caused the emergence of a class of landless laborers. In 1901 they were only 20 million; in 1951 they were 76 million, more than a fifth of the total population. It is these people to whom any political philosophy other than the existing one appears to be a bed of roses, and no wonder they become pawns in the hands of propagandists.

Many people seem to think that mechanization of agriculture would be a panacea for the ills of India. Nothing could be further from the truth. Mechanization results in producing a higher yield per man employed, not a higher yield per acre cultivated. Mechanization is essential, therefore, in such countries as the United States, where labor is relatively scarce and expensive. In India the conditions are just the reverse: there is a plethora of labor and a lack of employment. The great majority of the farmers are un-

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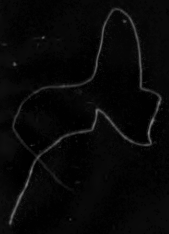

employed or underemployed for 3 or 4 months out of the year as things now stand. Application of even the simplest mechanical methods would result in throwing out of work at least half of the 250 million now dependent on agriculture. It would be an insoluble problem for any government to find alternative work for such a mass of people.

This rural unemployment and underemployment are due partly to the seasonal character of the rainfall. As the map shows, most places in India have an adequate, or more than adequate, amount of rain in a normal year, but it falls mainly in the summer months; droughts during the remainder of the year are a recurring hazard for the farmers.

Realizing that irrigation holds the key to any substantial increase in acreage under cultivation, the government is attempting to develop multipurpose projects (which provide water for agriculture and hydroelectric power for industries) along the lines of the TVA. Some of these, notably Bhakra-Nangal, Hirakud, Damodar Valley, Tungabhadra, and Kakrapara, are partly or wholly completed, and they have already added 1,500,000 acres to the irrigated area of India. When fully developed, these and other projects will ultimately be capable of irrigating 16,500,000 acres, and generating 1,935,000 kw. of hydroelectricity. It is estimated that by 1956, they will be far enough advanced to irrigate 8,500,000 acres and generate 1,114,000 kw. of hydroelectricity. When compared with what the country inherited on partition (1947)—48 million acres of land under irrigation and plants that generated 0.5 million kw. of hydroelectric energy—these are certainly significant achievements.

To tide over the shortage of fertilizers, a fertilizer factory has been erected at Sindri, which began operations in 1951; it is now producing 350,000 tons of ammonium sulphate a year. Plans are under way for further expansion of this plant in an effort to meet the enormous demand.

To augment agricultural output by every possible means, to improve communications, to foster public health and primary education, to develop cottage industries that may use to good advantage the farmers' leisure time, Community Development Projects have been initiated by the Indian government, with the financial assistance of the United States government, the Colombo Plan, and the Ford and Rockefeller Foundations, and with loans from the International Monetary Fund and the World Bank. As a first step, 55 such projects have been launched, each project comprising about 350 villages with a total population of about 200,000, covering an area of 450–500 square miles, of which about 150,000 acres are cultivated. While some of the projects are having difficulty in obtaining needed materials and well-trained personnel, in many others remarkable progress has been made. Demonstrations of higher yields from better seeds, better fertilizers, and better plows are convincing many a skeptical, conservative farmer. In

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